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The Genus *Thoron* Haliday (Hymenoptera: Scelionidae), Egg-Parasitoids of Waterscorpions (Hemiptera: Nepidae), with Key to World Species

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ABSTRACT

The world fauna of the genus *Thoron* is revised. The genus is described and *Neothoron* Masner is treated as a junior synonym (new synonymy). Relationships with *Elgonia* Risbec and other Scelionidae are discussed and a key to world species is presented. Six new species are described: *T. dayi*, new species (Indonesia), *T. dux*, new species (Bolivia, Venezuela), *T. garciai*, new species (Venezuela, Bolivia), *T. rex*, new species (Bolivia), *Thoron rivalis*, new species (Brazil, Panama), and *T. spinifer*, new species (Ecuador). *Thoron metallicus* Haliday (Holarctic), *T. longicornis* Masner and Huggert (USA), and *T. lautus* (Masner), new combination (Ecuador, Bolivia) are redescribed; the female of *T. lautus* and the male of *T. longicornis* are described and keyed for the first time. *Thoron gibbus* Ruthe is treated as a junior synonym of *T. metallicus* (new synonymy). Species of *Thoron* are only known to parasitize the eggs of Nepidae (Hemiptera: Heteroptera) with rearings from *Nepa* Linnaeus and association with *Curicta* Stål; apparently the genus *Ranatra* Fabricius is not a host.

INTRODUCTION

The members of several superfamilies of parasitic Hymenoptera are known to search for hosts in aquatic habitats. A number of genera of the family Scelionidae (Platygastridae) are also associated with such habi-

tats, with the females searching for hosts near or even under water. Where known, these species parasitize the eggs of aquatic Heteroptera and Odonata, with documented rearing records of hosts in the families Gerridae, Nepidae, and Aeshnidae. The genus *Thoron*

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Haliday was one of the first genera of scelionids to be described (Haliday, 1833), and the parasitism of nepid eggs was first established by Ferrière (1916) and Henriksen (1918). At least eight genera of scelionids worldwide are known to be aquatic in habits. These groups may be commonly encountered, even in North America and Europe, but little is known of their diversity or biology. In common with all groups of parasitic Hymenoptera, large parts of the world have not been well collected. As a result, we consider this paper to be a modest step in the exploration of this fascinating and unusual niche.

MATERIALS

This work is based specimens in the following collections:

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|------|--|
| AEIC | D.B. Wahl: American Entomological Institute, 3005 SW 56th Ave., Gainesville, FL 32608, USA |
| BMNH | M. Fitton: The Natural History Museum, Cromwell Road, London SW7 5BD, England |
| CNCI | J. Huber: Canadian National Collection of Insects, Agriculture and Agri-Food Canada, K. W. Neatby Building, Ottawa K1A 0C6, Canada |
| MIZA | J.L. García: Museo de Instituto de Zoología Agrícola, Maracay, Venezuela |
| MZSP | C.R.F. Brandão: Museu de Zoologia da Universidade de São Paulo, Avenida Nazaré 481, Bairro Ipiranga, São Paulo, SP 04263-000, Brazil |
| OSUC | N.F. Johnson: The Ohio State University Insect Collection, 1315 Kinnear Road, Columbus, OH 43212, USA |

THORON HALIDAY

Thoron Haliday, 1833: 271. Original description. Type: *Thoron metallicus* Haliday, by monotypy. For subsequent taxonomic literature see Johnson (1992).

Neothoron Masner, 1972: 837. Original description. Type: *Neothoron lautus* Masner, by monotypy and original designation. NEW SYNONYMY.

Masner (1972) proposed *Neothoron* and distinguished it from *Thoron* principally on the basis of the longer postmarginal vein in *N. lautus*. Later, Masner and Huggert (1979) referred to additional differences in the struc-

ture of the propodeum, the armature of the dorsellum, and the position of the lateral ocelli. With a substantially greater number of both specimens and species presently before us, we find that none of the character states above serves as a distinguishing character between *Neothoron* and *Thoron*. The distance of the lateral ocellus from the inner orbit varies from less than one diameter to more than two diameters, and it principally distinguishes only *T. metallicus* Haliday. The length of the postmarginal vein intergrades from being nearly absent to being distinctly longer than the stigmal vein. Species with a long postmarginal vein may have the propodeum deeply excavate. Similarly, most species that would be classified in *Neothoron* have the dorsellum clearly armed. We conclude that these character states are not correlated and thus cannot justify the recognition of two genera.

We currently cannot effectively argue whether *Neothoron* represents a monophyletic group. The internal pattern of phylogenetic relationships in the family is poorly understood, and it is unclear which group of parasitic Hymenoptera should be considered the sister of Platygastroidea. The elongate postmarginal vein of *Neothoron* is commonly found among scelionids, but this cannot be construed as convincing evidence that *Neothoron* is paraphyletic. The best cladistic reason to synonymize the two names is that today, even with much greater sampling around the world, *Thoron* sensu stricto remains monobasic. Our conclusion is that *Neothoron* is a junior synonym of *Thoron* (new synonymy).

GEOGRAPHIC DISTRIBUTION: *Thoron* is a widely distributed, but not cosmopolitan genus (fig. 1). One species, *T. metallicus*, is found in the eastern United States and Canada; Europe, from Ireland east to central Russia; and in northern Tunisia. A single species, *T. dayi*, has been collected from Indonesia. *Thoron longicornis* is known only from the Huachuca Mountains of southeastern Arizona. Six species are found from Panama to southeastern Brazil, and three of these are sympatric in Bolivia.

BIOLOGY: The only species of *Thoron* for which the biology is relatively well known is *T. metallicus*. This Holarctic species has

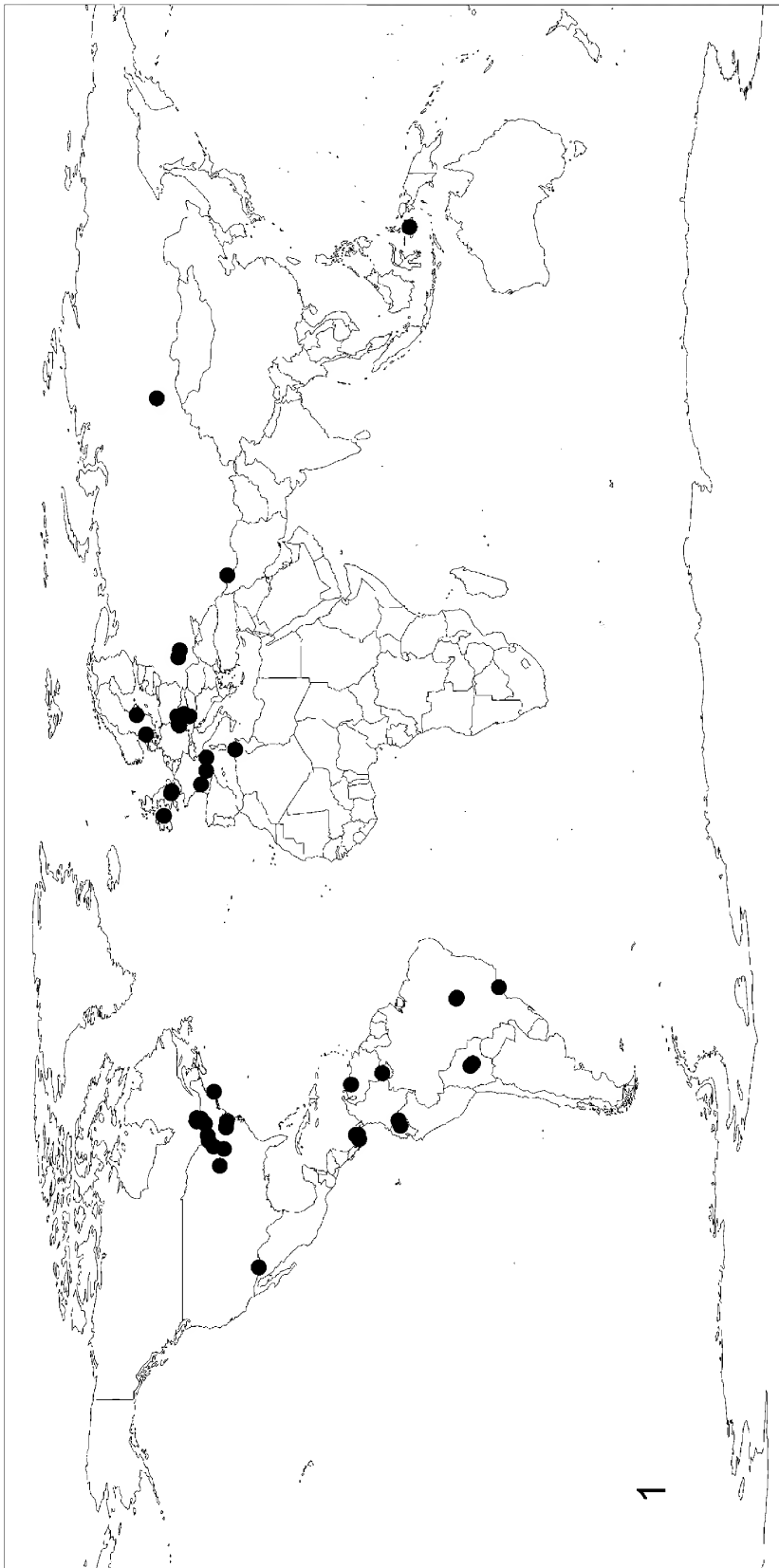


Fig. 1. World distribution of *Thoron* Haliday. Six species are found in South and Central America; the single point in Indonesia is *T. dayi*, n.sp.; the locality in the southwestern United States is *T. longicornis* Masner and Huggert; the remaining Holarctic records are all for *T. metallicus* Haliday. Map drawn with units of latitude and longitude of equal size.

been reared from eggs of *Nepa cinerea* L. (Ferrière, 1916; Henriksen, 1918) in Europe. The only species of *Nepa* in the United States and Canada is *Nepa apiculata* Uhler, known from southern Québec and Ontario, west to Manitoba and North Dakota, and south to Kansas and Georgia (Sites and Polhemus, 1994). This roughly corresponds with the distribution of *T. metallicus* in the New World (fig. 1). It seems likely that *N. apiculata* is the host in the Nearctic, although no rearings have been made.

Thoron metallicus appears to be a univoltine species that is particularly long-lived in the adult stage. Eggs of its presumed host in the New World, *Nepa apiculata*, are present from mid-May to mid-June in southern Illinois (McPherson and Packauskas, 1987). Male specimens have been collected from June to September in the USA and Canada and from July to September in Europe (one male specimen from Tunisia was collected in April). In contrast, females have been collected from April to October and even as early in the year as March in Sweden (59°31'N). We interpret these data to mean that the adult wasps emerge from the host in midsummer and that the females overwinter and then attack newly laid waterscorpion eggs the following year.

Specimens of *Thoron longicornis* were collected in numbers in the Huachuca Mountains of Arizona in association with nymphs and adults of *Curicta pronotata* Kuitert. The genus *Curicta* Stål, recently revised by Keffer (1996), has 16 species in the New World. *Nepa* does not occur in the Neotropics. We speculate that *Curicta* is the probable host of Neotropical *Thoron* because of the similarity in size and biology with *Nepa*.

There appear to be no records of *Thoron* attacking the widespread and relatively common genus *Ranatra* Fabricius in the Nearctic. This may well be due to a difference in oviposition habits: *Nepa* and *Curicta* generally lay their eggs in sand or mud along the shoreline, with the egg's respiratory horns protruding into the open air (McPherson and Packauskas, 1987; Keffer et al., 1994). *Ranatra*, in contrast, places its eggs within the tissue of aquatic vegetation, again with the respiratory horns protruding into the air (Menke, 1979).

We have only a single specimen of *Thoron* from the Old World outside of Europe, Russia, and the Caucasus, described here as *T. dayi* from Indonesia, yet the Nepidae are most diverse in the tropics of Africa and Asia. This leads us to predict that the Old World may yet harbor numerous undescribed species of *Thoron* or its close relatives.

Most of the specimens of *Thoron rivalis* were collected in the cerrado of central Brazil along a small permanent stream at the end of the dry season. The first rain that season fell on October 1 (1995), but specimens of both sexes of the wasp were collected in the days preceding that event.

RELATIONSHIPS: Kozlov (1970) proposed a new higher classification of the Scelionidae, dividing it into four subfamilies (Scelioninae, Teleasinae, Telenominae, and Baeinae) and 17 tribes. Of particular relevance for this discussion, Kozlov described as new the tribe Psilanteridini (six genera, Scelioninae) and the monobasic tribes Thoronini (Baeinae), Tiphodytini (Telenominae), and Pseudanteridini (Scelioninae). The monophyly of Psilanteridini was based on the explicit recognition of a single apomorphic character, the presence of a skaphion on the mesonotum. Masner (1972) correctly noted that a skaphion is present as well in the other tribes, and, further, that those three are all associated with aquatic habitats. He placed the three, together with the new genera *Neothoron*, *Microthoron* Masner, *Tanaodytes* Masner, and *Thoronella* Masner, in a single tribe, Thoronini, within the Scelioninae. *Thoronidea* Masner and Huggert was later described and added to the thoronine cast of characters (Masner and Huggert, 1979).

We now view the proposed monophyly of Thoronini with some skepticism. The basis for the hypothesis was primarily the structure of the female clava; the long, stiff bristles on the mesosoma; and the smooth surface of the body. Austin and Field (1997) demonstrated that one of the genera, *Thoronella*, possesses a complex apomorphic character complex, the *Scelio*-type tubular ovipositor. This strongly suggests to us that it should be removed from the Thoronini. Carlow (1992) discovered that *Thoronella* adults are phoretic on dragonflies. It therefore seems plausible to us that the character states used to

define *Thoronini* may well be convergent and somehow associated with underwater behavior, respiration, and locomotion of the adult wasps.

There are no known species of *Thoron* in subsaharan Africa, none in most of tropical Asia, and none in far eastern Asia (Russian Far East, Korea, or Japan). The genus *Elgonia* Risbec is highly reminiscent of *Thoron* in both structural details and overall habitus. Species of this genus have been collected in both tropical Africa and Asia in pan traps in aquatic environments, including habitats rich in nepids. *Elgonia* is distinguished from *Thoron* by its abrupt, six-segmented female antennal clava, with all clavomeres separated; male antennal segment 5 carinate and with a small basal, ventral excavation (the sex-segment); metasomatic T3 is densely punctate; and the lower portion of the metapleuron above the hindcoxa is setose. We are continuing to investigate the question of the relationships of *Thoron* as a component of another, broader study, now in progress.

DESCRIPTION: Body smooth, shining, with no matte microsculpture, with scattered, long, semierect bristles, usually with underlying micropilosity; body black or, rarely, dark brown.

Head transverse, lateral ocellus separated from inner orbit by 1–2 ocellar diameters; compound eye glabrous (fig. 10); occipital carina crenulate; malar sulcus present; cheek with distinct fanlike striae; mandibles tridentate; clypeus truncate; female antenna appearing 8-segmented, radicle distinctly elongate, about one-third length of remaining A1, clava subcompact, 5-segmented, sensillar formula 1-2-2-2-1; male antenna 12-segmented, filiform, A5 not sexually modified; palpal formula 4–2.

Mesosoma about as high as wide, only slightly arched dorsally; skaphion well developed, glabrous, smooth, shining (fig. 10); notaulus varying from nearly percurrent (fig. 16) to reduced to small rudiment in anterior third of mesoscutum (fig. 15) or small furrows near transscutal articulation (figs. 17, 18); humeral and suprahumeral sulci crenulate; posterior margin of axilla deeply crenulate; scutellar disk weakly transverse, convex; dorsellum usually produced medially into subtriangular process, rarely long and

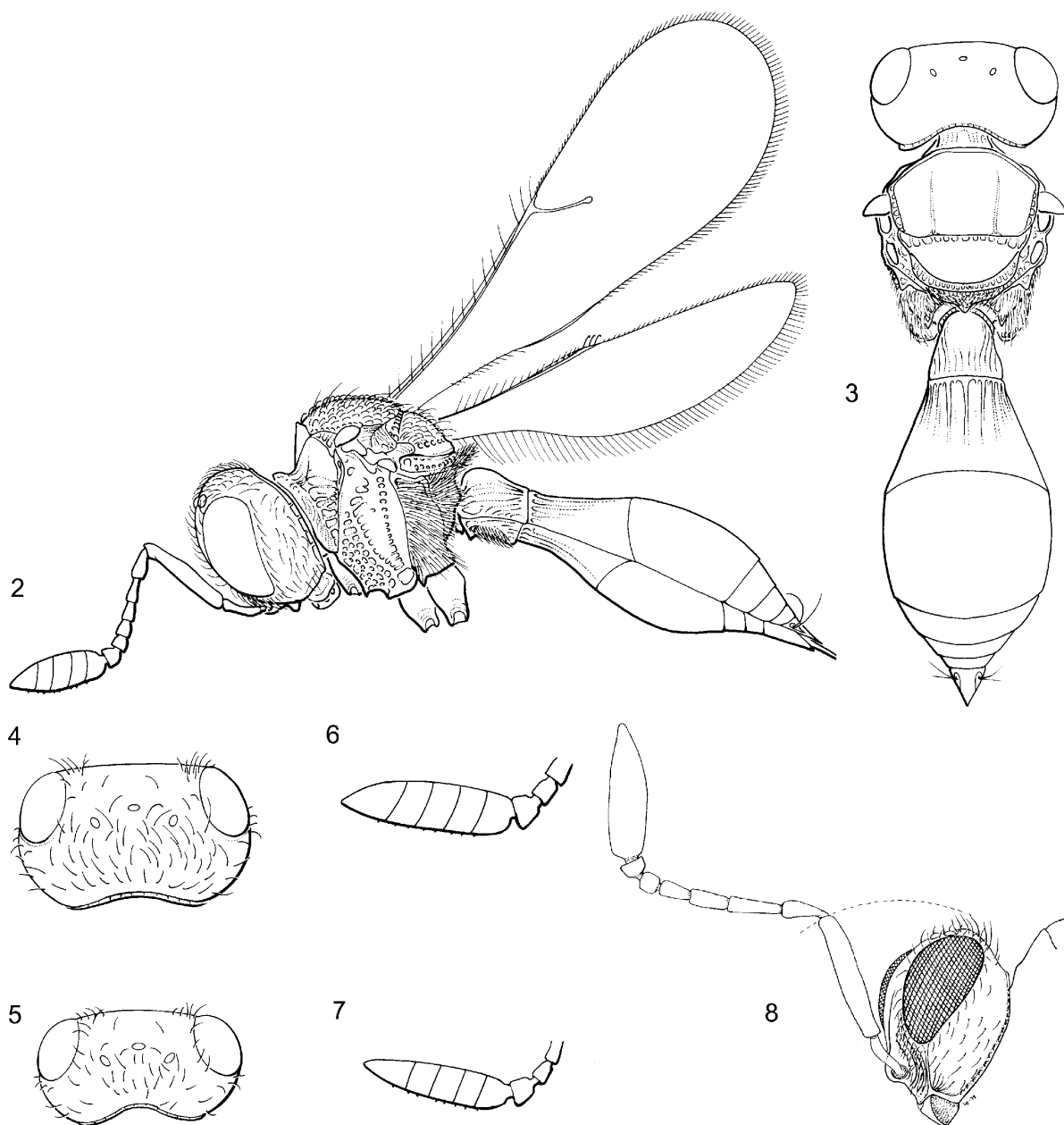
pointed; propodeum variable in length, rugulose; netrion crenulate anteriorly, punctate; mesopleural carina present; mesepisternum rugulose; metepisternum narrow, usually sparsely setose; metepimeron usually glabrous, rarely densely pilose; submarginal vein in forewing closely approximated to costal margin; marginal vein short, slightly to distinctly enlarged; postmarginal vein variable in length, from rudimentary to longer than stigmal vein; basal vein nebulous, V-shaped, upper portion forming distinct acute angle with submarginal vein; submarginal vein in hindwing extremely close to costal margin, costal cell largely absent, near hamuli with narrow, short wing membrane visible.

Metasoma pedunculate, with 7 visible tergites in female, 8 in male; laterotergites well developed, deeply incised into sternites to form submarginal ridge; T1 elongate, in female sometimes with hump, longitudinally costate; T2 with longitudinal costae, subequal to T3 in length; T3 widest segment, always smooth, nearly glabrous; T7 in female external, subtriangular, articulating with T6 basally, not extruded with ovipositor; ovipositor internal, nontubular.

KEY TO WORLD SPECIES OF *THORON*

Females (Unknown for *T. spinifer*)

1. Mesoscutum and scutellum with regularly spaced, deep, thimblelike, setigerous punctures; notaulus reduced to short, isolated furrow in anterior third of mesoscutum and absent near transscutal articulation (fig. 15); Indonesia (Seram) . . . *T. dayi*, n.sp.
- Mesoscutum and scutellum at most with minute setigerous punctures; notaulus clearly present posteriorly near transscutal articulation, often very long (figs. 3, 16–18) . . . 2
2. Apex of A1 distinctly extending above top of head (lateral view with A1 in flexed position (fig. 8) 3
- Apex of A1 at same level as top of head (lateral view with A1 in flexed position, fig. 2) 4
3. Mesoscutum with only long semidecumbent bristles and no micropilosity; notaulus short, not extending anteriorly to level of posterior margin of tegula, simple, without crenulae (fig. 18); Bolivia . . . *T. rex*, n.sp.
- Mesoscutum with both long bristles and



Figs. 2–8. 2, *Thoron metallicus* Haliday, lateral habitus; 3, *T. metallicus*, dorsal habitus; 4, *T. metallicus*, head of male with expanded genae; 5, *T. metallicus*, head of male with receding genae; 6, *T. rivalis*, n.sp., antennal clava; 7, *T. garciai*, n.sp., antennal clava; 8, *T. longicornis* Masner and Huggert, head and antenna, lateral view (from Masner and Huggert, 1979).

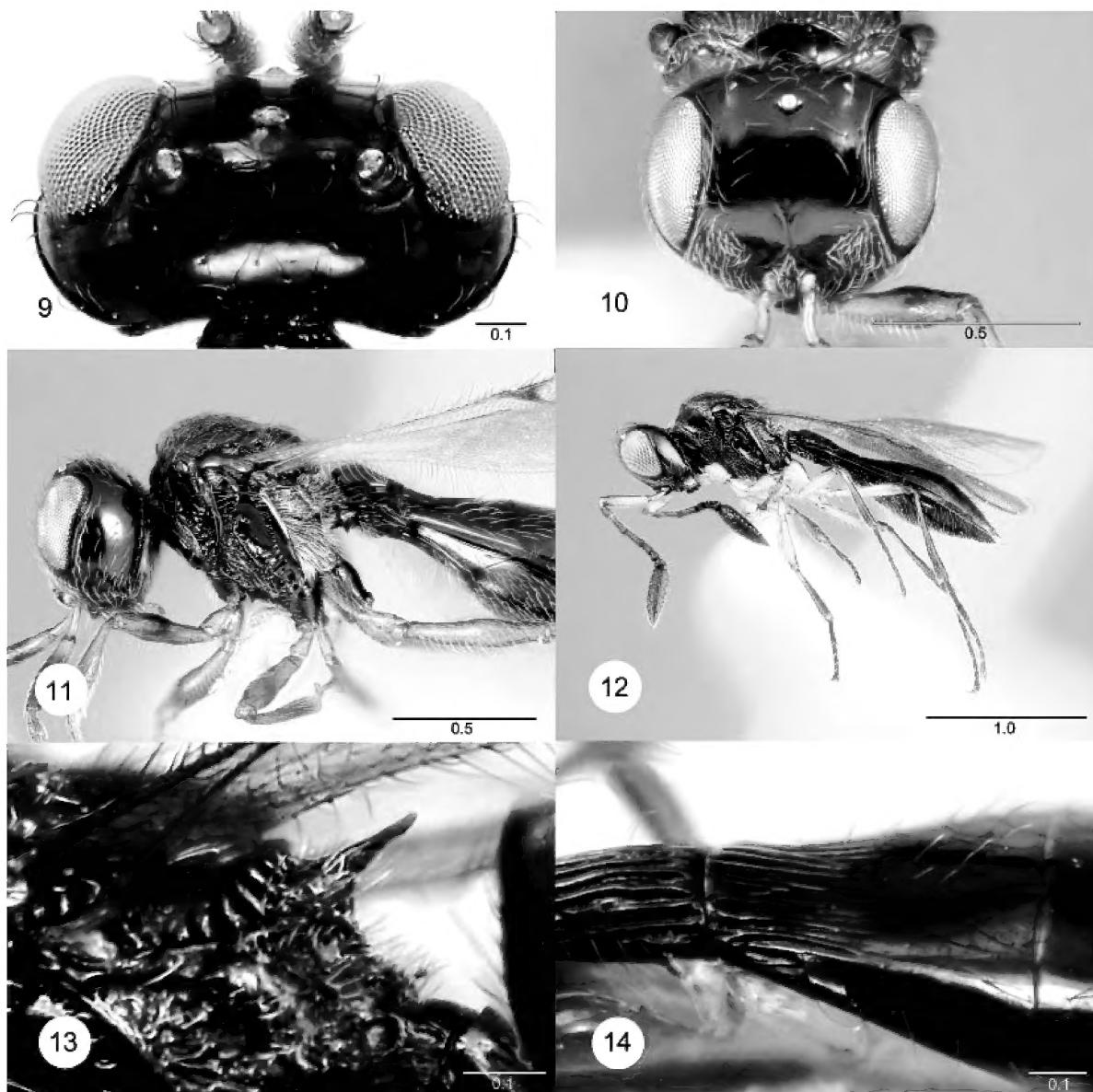
shorter underlying pilosity; notaulus long, extending anteriorly beyond level of posterior margin of tegula, deeply crenulate (fig. 16); USA (Arizona)

. *T. longicornis* Masner and Huggert
4. Metapleuron and lateral face of propodeum uniformly covered with long, silvery hairs (figs. 2, 11); postmarginal vein extremely

short or absent, much shorter than length of stigmal vein; Holarctic

. *T. metallicus* Haliday

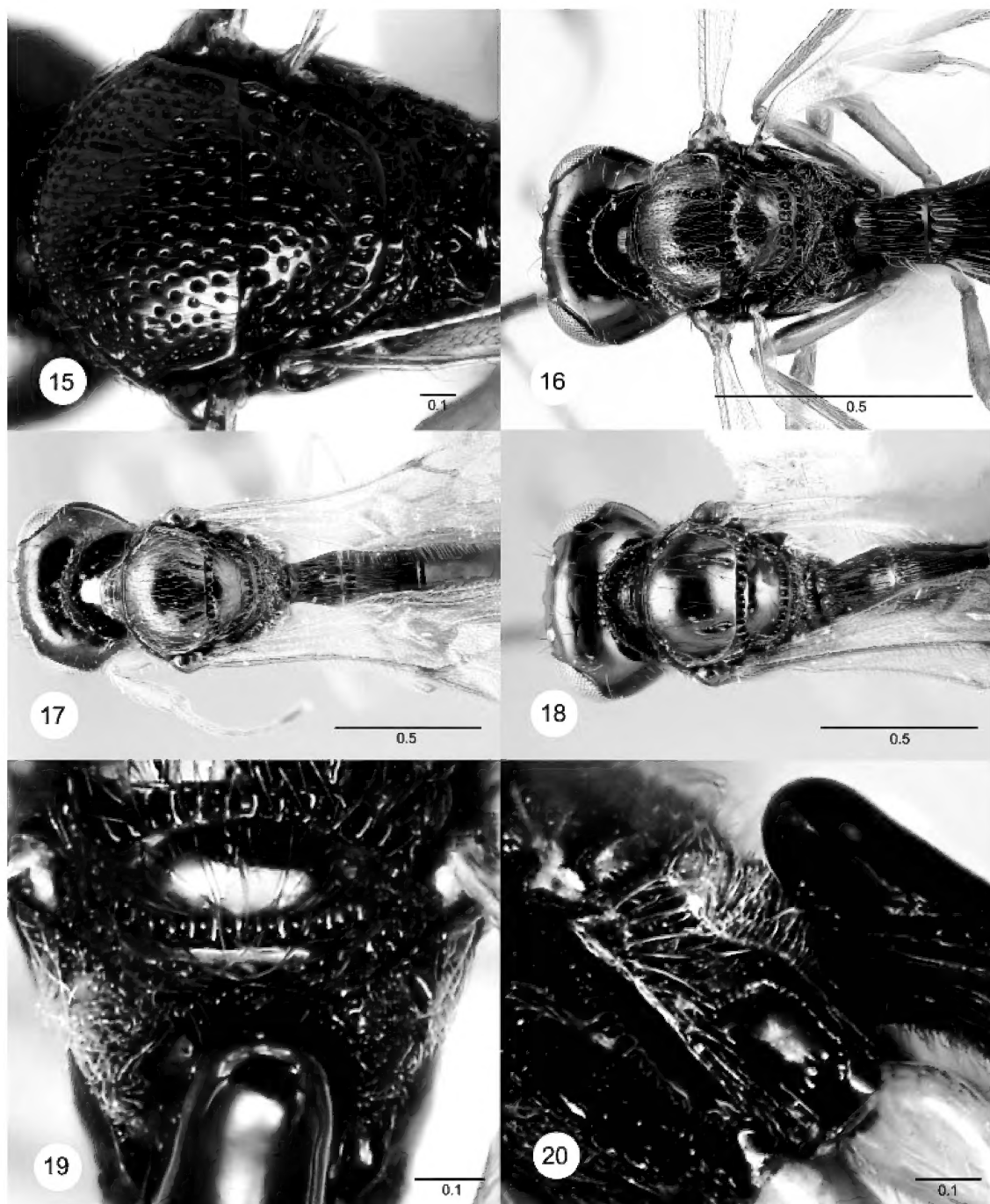
— Metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous (figs. 12, 20); postmarginal vein clearly developed, longer than stigmal vein 5



Figs. 9–14. **9**, *Thoron lautus* (Masner), head, dorsal view; **10**, *T. metallicus* Haliday, head, frontal view; **11**, *T. metallicus*, female, lateral view of mesosoma and base of metasoma; **12**, *T. rivalis*, n.sp., lateral habitus; **13**, *T. spinifer*, n.sp., dorsellum, lateral view; **14**, *T. spinifer*, T2, dorsolateral view. Scale bar in millimeters.

5. A2–A4 bright yellow, contrasting with dark brown A5–A7; notaulus very short, not extending anteriorly beyond level of anterior margin of tegula (fig. 17); Bolivia *T. dux*, n.sp.
- A2–A7 dark brown; notaulus long, distinctly extending beyond level of anterior margin of tegula (as in figs. 3, 16) 6
6. T1 with strong, smooth hump (fig. 20), propodeum distinctly excavate medially; dorsellum unarmed medially (fig. 19); A4 lon-

- ger than A3; T3 slightly longer than wide; Bolivia, Ecuador *T. lautus* (Masner)
- T1 at most with slight convexity anteriorly, longitudinally costate; propodeum not medially excavate; dorsellum spinose medially; A4 subequal to or shorter than A3; T3 shorter than wide 7
7. T2 slightly longer than T3; clava more robust, 3.5 times longer than wide (fig. 6); Brazil, Panama *T. rivalis*, n.sp.
- T2 distinctly shorter than T3; clava more



Figs. 15–20. **15**, *Thoron dayi*, n.sp., mesosoma, dorsal view; **16**, *T. longicornis* Masner and Huggert, head and mesosoma, dorsal view; **17**, *T. dux*, n.sp., head and mesosoma, dorsal view; **18**, *T. rex*, n.sp., head and mesosoma, dorsal view; **19**, *T. lautus* (Masner), posterior mesosoma, dorsal view; **20**, *T. lautus* (Masner), metapleuron, propodeum, and T1 horn, lateral view. Scale bar in millimeters.

slender, 4 times longer than wide (fig. 7);
Bolivia, Venezuela *T. garciai*, n.sp.

Males (unknown for *T. dayi*, *T. rex*)

1. Notaulus very short, not extending anteriorly to level of anterior margin of tegula (fig. 17); A11 1.4 times as long as wide; Bolivia *T. dux*, n.sp.
- Notaulus long, distinctly reaching or exceeding level of upper margin of tegula (figs. 3, 16); A11 1.7–2.8 times longer than wide 2
2. Metapleuron above hindcoxa with dense silvery pilosity, hairs obscuring surface of sclerite (figs. 2, 11); lateral ocellus separated from inner orbit at least 2 ocellar diameters (figs. 4, 5); all coxae dark brown to black; dorsellum with small medial spine; Holarctic *T. metallicus* Haliday
- At least posterior portion of metapleuron above hindcoxa glabrous or nearly so (figs. 12, 20); surface smooth; lateral ocellus separated from inner orbit by one ocellar diameter or less; all coxae yellow; dorsellum variable 3
3. Dorsellum produced into needlelike spine (fig. 13); costae on T2 short, reaching only to middle of tergite (fig. 14); notaulus noncrenulate, not extending anteriorly beyond anterior margin of tegula *T. spinifer*, n.sp.
- Dorsellum either unarmed or produced into wide, subtriangular spine; costae on T2 long, distinctly surpassing basal half of tergite; notauli elongate, extending anteriorly beyond notauli into anterior three-fourths of sclerite 4
4. Apex of A1 distinctly extending above top of head (lateral view with A1 in flexed position, fig. 8); notaulus broad, deeply crenulate (fig. 16); postmarginal vein short, not surpassing apex of stigmal vein; USA (Arizona) *T. longicornis* Masner and Huggert
- Apex of A1 at same level as top of head (lateral view with A1 in flexed position, fig. 2); notaulus narrow, noncrenulate; postmarginal vein long, apex clearly extending apically beyond level of tip of stigmal vein 5
5. Dorsellum unarmed; temple behind eye slight bulging in dorsal view, head as wide across temples as across compound eyes (fig. 9); Ecuador *T. lautus* (Masner)
- Dorsellum produced into subtriangular spine; temple strongly receding in dorsal view, head widest across compound eyes 6
6. Hindfemur partly to entirely dark brown; T2 as long as T3; A11 2.0–2.3 times longer than wide; Brazil, Panama *T. rivalis*, n.sp.
- Hindfemur almost entirely yellow; T2 shorter

than T3; A11 2.4–2.5 times as long as wide;
Bolivia, Venezuela *T. garciai*, n.sp.

Thoron dayi, new species

Figure 15

DESCRIPTION: Length 2.4 mm. Female A4 subequal to or shorter than A3; clava robust, 3.75 times longer than wide; apex of A1 well below top of vertex; female A2–A7 dark brown; ocelli large, lateral ocellus separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum with regularly spaced, deep, thimblelike punctures (fig. 15); notaulus reduced to short, isolated furrow medially, absent near transscutal articulation, simple, without crenulae; mesoscutum with long decumbent bristles and no micropilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein extremely short or absent, much shorter than length of stigmal vein; with short spine medially; dorsal surface of propodeum excavate medially; T1 with moderately developed, smooth hump; T2 distinctly shorter than T3; T3 as long as wide.

DIAGNOSIS: Immediately distinguished from all other species of *Thoron* by the deeply punctate mesosoma and the notauli reduced to small furrows in the anterior portion of the mesoscutum.

ETYMOLOGY: Named after its collector, M. Day.

MATERIAL EXAMINED: Holotype female: **INDONESIA**: Seram, Solea, Uncanya, viii.1987, M.C. Day, malaise trap, OSUC 77431 (BMNH).

COMMENTS: The family Nepidae is composed of some 200 species and 12 genera around the world (Menke, 1979). This single specimen is, in our opinion, an unusual species, but one that clearly falls within the limits of the genus *Thoron*. Its disjunct distribution strongly suggests to us that there are more species yet to be discovered along calm watercourses in tropical Asia.

Thoron dux, new species

Figure 17

DESCRIPTION: Length 1.7 mm. Female A4 subequal to or shorter than A3; clava robust,

3.2 times longer than wide; apex of A1 well below top of vertex; female A2–A4 bright yellow, contrasting with dark brown A5–A7; male A11 1.6–1.8 times as long as wide; ocelli large, lateral ocellus separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures (fig. 17); notaulus very short, not extending anteriorly to level of posterior margin of tegula; mesoscutum with both long bristles and shorter underlying pilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein clearly developed, longer than stigmal vein; dorsellum spinose medially, short, subtriangular; dorsal surface of propodeum not excavate; all coxae yellow; hindfemur almost entirely honey-yellow to yellow, concolorous with apex of coxa; T1 without hump, longitudinally costate throughout; costae on T2 reaching at least to posterior third of tergite; T2 distinctly shorter than T3; T3 wider than long.

DIAGNOSIS: Similar to *T. rex* in the yellow color of the antennal segments 2–4 in the female; distinguished from *rex* by the presence of a spine on the dorsellum.

ETYMOLOGY: From the Latin, *dux*, for prince or leader, and alluding to its similarity with *T. rex*.

MATERIAL EXAMINED: Holotype female: **BOLIVIA:** Santa Cruz, Ichilo, "El Chore" pools, 17°01'S, 64°11'W, 253 m, 9–11.v.1997, L. Masner, yellow pan traps, OSUC 77426 (CNC type no. 22864). Paratypes: 1 female with same data as holotype (OSUC 77427). Santa Cruz, Andres Ibañez, Potrerillo, 17°40'S, 63°27'W, 438 m, 13–16.v.1997, L. Masner, yellow pan traps, 1♂, 1♀ (OSUC 77428, 77429).

Thoron garciai, new species

Figure 7

DESCRIPTION: Length 2.0 mm. Female A4 subequal to or shorter than A3; clava slender, at least 4 times longer than wide (fig. 7); apex of A1 at same level as top of head (lateral view with A1 in flexed position); female A2–A7 dark brown; male A11 2.4–2.6 times as long as wide; ocelli large, lateral ocellus

separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus long, extending anteriorly beyond level of posterior margin of tegula, simple, without crenulae; mesoscutum with both long bristles and shorter underlying pilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein clearly developed, longer than stigmal vein; dorsellum spinose medially, short, subtriangular; dorsal surface of propodeum not excavate; all coxae yellow; hindfemur almost entirely honey-yellow to yellow, concolorous with apex of coxa; T1 without hump, longitudinally costate throughout; costae on T2 reaching at least to posterior third of tergite; T2 distinctly shorter than T3; T3 wider than long.

DIAGNOSIS: Most similar to *T. rivalis* (fig. 12), distinguished from it most easily by the yellow hindfemora and the more slender female antennal clava.

ETYMOLOGY: This species is named in honor of our friend and colleague, Dr. José Luis García (Maracay, Venezuela), who braved inundation and stranding in the efforts to collect the series that includes the holotype.

MATERIAL EXAMINED: Holotype female: **VENEZUELA:** Amazonas, Surumoni, 100 m, 3°10'30"N, 65°40'30"W, 13–21.vii.1999, J.L. García, trampa amarilla flotante, OSUC 77474 (MIZA). Paratypes: 8♀, 13♂ with same data as holotype (including OSUC 77475). **BOLIVIA:** Santa Cruz, Andres Ibañez, Potrerillo, 17°40'S, 63°27'W, 9–11.v.1997, L. Masner, yellow pan trap, 1♀ (OSUC 77476).

Thoron lautus (Masner), new combination
Figures 9, 19, 20

Neothoron lautus Masner, 1972: 839. Original description. Sarazin, 1986: 975 (type information).

DESCRIPTION: Length 2.4 mm. Female A4 longer than A3; clava slender, at least 4 times longer than wide; apex of A1 at or below level of top of head (lateral view with A1 in flexed position); female A2–A7 dark brown; male A11 3.1 times as long as wide; ocelli

large, lateral ocellus separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus long, almost percurrent, extending anteriorly beyond level of posterior margin of tegula, simple, without crenulae; mesoscutum with both long bristles and shorter underlying pilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein clearly developed, longer than stigmal vein; dorsellum unarmed medially (fig. 19); dorsal surface of propodeum excavate medially; all coxae yellow; hindfemur partly to entirely dark brown; T1 with strong, smooth hump (figs. 19, 20); costae on T2 reaching at least to posterior third of tergite; T2 as long as T3; T3 slightly longer than wide.

DIAGNOSIS: Resembling *T. rex* in the lack of a medial spine or thorn on the dorsellum; distinguished from it by the strongly developed horn on T1 in the female, the shorter scape, and the presence of fine micropilosity on the mesoscutum.

MATERIAL EXAMINED: Holotype male: **ECUADOR:** Napo and Coca Rivers, Napo, v.1965, 250 m, L. Peña (CNC type no. 12539). Other material: One male paratype with same data as holotype. **ECUADOR:** Sucumbios, Sacha Lodge, 270 m, 0°30'S, 76°30'W, 23.vi–3.viii.1994, P. Hibbs, malaise trap, 1 ♀ (OSUC 77425). **BOLIVIA:** Santa Cruz, Andres Ibañez, Potrerillo, 17°40'S, 63°27'W, 438 m, 13–16.v.1997, L. Masner, yellow pan traps B-17, 1 ♀ (OSUC 77424).

Thoron longicornis Masner and Huggert
Figures 8, 16

Thoron longicornis Masner and Huggert, 1979: 915. Original description. Sarazin, 1986: 975 (type information).

DESCRIPTION: Length 2.9 mm. Female A4 distinctly shorter than A3; clava robust, 3.4 times longer than wide; apex of A1 distinctly extending above top of head (lateral view with A1 in flexed position, fig. 8); female A2–A4 reddish brown, A5–A7 brown; male A11 1.6–1.8 times as long as wide; ocelli moderately large, lateral ocellus separated from inner orbit by approximately one di-

ameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus long, extending anteriorly beyond level of posterior margin of tegula, deeply crenulate (fig. 16); mesoscutum with both long bristles and shorter underlying pilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein extremely short or absent, much shorter than length of stigmal vein; with massive, strong medial spine, sharply pointed; dorsal surface of propodeum not excavate; coxae yellowish brown, with base darker than apex; hindfemur almost entirely honey-yellow to yellow, concolorous with apex of coxa; T1 without hump, longitudinally costate throughout; costae on T2 reaching at least to posterior third of tergite; T2 distinctly shorter than T3; T3 wider than long.

DIAGNOSIS: This species shares with *T. rex* the elongate scape, clearly extending beyond the vertex. It differs from that species, and all other species treated here, in the deep and strongly crenulate notauli.

MATERIAL EXAMINED: Holotype female: **UNITED STATES:** Arizona, Huachuca Mts., Ramsey Canyon, 25 km S Serra Vista, 1820 m, vi.1967, malaise trap set across creek in a narrow gully, R.F. Sternitzky (CNC type no. 15598). Other material: **UNITED STATES:** Arizona, Cochise Co., Huachuca Mts., Ramsey Cyn., 1820 m, 20.viii–10.ix.1990, L. Masner, yellow pan traps along creek, below pool, 13♀, 55♂ (including OSUC 77436, 77437).

COMMENTS: The nepid *Curicta pronotata* was also found in numbers in the same creek as this species and, presumably, is its host. This waterscorpion is also known from Sabina Canyon in Arizona and northwestern Mexico: these may be likely areas to find additional populations of this parasitoid.

A second species of waterscorpion, *Curicta scorpio* Stål, is found in Louisiana and Texas, south to Nicaragua (Keffer, 1996). This suggests that there may be another species of *Thoron* in that region, an area in which we have seen no specimens of *Thoron*.

Thoron metallicus Haliday
Figures 2–5, 10, 11

Thoron metallicus Haliday, 1833: 272. Original description, keyed. Walker, 1836: 355 (descrip-

tion); Thomson, 1858: 420 (description); Kieffer, 1926: 171 (description, keyed); Hellén, 1971: 19 (description); Masner, 1972: 837 (synonymy); Kozlov, 1978: 622 (description); Masner and Huggert, 1979: 917 (diagnosis); Kozlov and Kononova, 1990: 322 (description).

Teleas (Thoron) metallicus: Blanchard, 1840: 290. Not seen: reference from Dalla Torre (1898b).

Thoron Metallicus: Kieffer, 1912: 104. Description.

Teleas fornicatus Nees von Esenbeck, 1834: 292. Original description. Walker, 1836: 355 (junior synonym of *Thoron metallicus* Haliday); Walker, 1874: 7 (figured).

Teleas solidus Nees von Esenbeck, 1834: 291. Original description. Walker, 1836: 355 (junior synonym of *Thoron metallicus* Haliday); Herich-Schäffer, 1840: 58 (diagnosis);

Thoron gibbus Ruthe, 1859: 121. Original description. Kieffer, 1926: 171–172 (description, keyed); Masner, 1972: 836 (taxonomic status); Masner and Huggert, 1979: 917 (taxonomic status). NEW SYNONYMY.

Thoron Gibbus: Kieffer, 1912: 106 (description).

Anteris nepea Ferrière, 1916: 71. Original description, incorrect original spelling. Masner, 1972: 837 (junior synonym of *Thoron metallicus* Haliday).

DESCRIPTION: Length 2.4 mm. Female A4 subequal A3, just barely longer than A5 (fig. 2); clava robust, 2.9 times longer than wide; apex of A1 well below top of vertex; female A2–A7 dark brown; male A11 1.6–1.8 times as long as wide; ocelli small, lateral ocellus separated from inner orbit by at least slightly less than twice its diameter (figs. 4, 5); central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus long, almost percurrent (fig. 3), extending anteriorly beyond level of posterior margin of tegula, simple, without crenulae; mesoscutum with both long bristles and shorter underlying pilosity; metapleuron and lateral face of propodeum uniformly covered with long, silvery hairs (figs. 2, 11); marginalis thickened, and surrounding membrane deeply pigmented; postmarginal vein extremely short or absent, much shorter than length of stigmal vein; dorsellum spinose medially, short, subtriangular; dorsal surface of propodeum excavate medially; all coxae dark brown to black; hindfemur light brown, lighter in color than dark coxa; T1 with strong, smooth hump, sometimes low, not

strongly raised; costae on T2 reaching at least to posterior third of tergite; T2 distinctly shorter than T3; T3 wider than long.

DIAGNOSIS: *Thoron metallicus* is distinguished from all other species by its pilose metapleuron, the small ocelli (POL 1.5–2× OD), the short postmarginalis, and the enlarged area of pigmentation around the marginal vein.

MATERIAL EXAMINED: 660♀, 192♂. Nearctic Region: **CANADA:** **Québec:** Gatineau Pk., Ridge Rd., 300 m, Ridge Rd., 7.viii.1982, L. Masner, 2♀, 1♂ (OSUC 77496). Lac Jean-Venne, 45°41'N, 76°03'W, 20–25.vi.1995, yellow pan traps, sphagnum bog, 2♀ (OSUC 77462). Old Chelsea, 30.VI.1961, J.R. Vockeroth, 1♀ (OSUC 77494). Pontiac, Ft-Coulange, 28.X.1992, LeSage-Masner, Sift. berl. Selix [sic], 1♀ (OSUC 77489). **Ontario:** Essex Co., Pt. Pelee National Park, wooded area by west beach, 10–23.ix.1999, O. Lonsdale, Malaise/pan traps, debu00012571, 1♀. Fanshaw, 17.v.1982, A. Tomlin, 1♀ (OSUC 77498). Flamborough, 43°23'02"N, 80°03'10"W, 20–25.vi.1995, L. Masner, yellow pan traps, creek, 4♀, 2♂ (OSUC 77470, OSUC 77471). Flint Hill nr. Kemptville, 12.vi.1983, L. Dumochel, 1♀ (OSUC 77497). Hess creek, 10 km S Kemptville, 18.vii.2001, L. Masner, yellow pan trap, 4♀ (OSUC 77500). London, 14.v.1982, interception trap, onion field, A. Tomlin, 1♀ (OSUC 77495). Mississippi Lake, 2–23.x.1991, BRC HYM TEAM, floating malaise trap, 1♀ (OSUC 77490). Mississippi Lake, McEwen's Bay, 22–29.v.1991, float pan trap, L. Dumochel, 1♀ (OSUC 77499). Ottawa, 22–26.ix.1998, J.R. Vockeroth, yellow pan trap, dry *Typha/Carex* marsh, 1♂. Outlet Beach, Prince Edward Co., 14.viii.1968, J. R. Vockeroth, 1♀. Oxford Mills, 29.v–1–vi.1973, L. Masner, 1♀; 12.vii.1984, 1♀ (OSUC 59206); 25.vii.1979, 1♀; 8.viii.1984, 1♂; 15.viii.1984, 2♂ (OSUC 59207); 10.ix.1971, L. Masner, taken on water weeds, 1♂ (OSUC 77491); 13–20.vii.1973, G. Gibson, yellow pan trap, 1♂; 4.viii.1978, 1♂ (OSUC 77492); 17.viii.1978, 1♂; 17–24.viii.1973, 2♂; 27.vii.1978, 2♂; 27.vii–3.viii.1973, 1♂; 20–27.viii.1973, 1♂; 31.viii–7.ix.1973, 1♀. **UNITED STATES:** **Indiana:** Tippecanoe Co., iv.1977, J.F. MacDonald, malaise trap, 1♀ (OSUC 77466). **Maryland:** Prince Georges Co., Patuxent Res. Sta., 22–26.vi.1980, pan trap, 1♀ (OSUC 77469). **Massachusetts:** Cape Cod, Eastham, 8.ix.1988, J.R. Vockeroth, pan trap, pool margin, *Typha, Juncus*, 2♀, 1♂ (OSUC 77463–77465). **Ohio:** Pickaway Co., Deer Creek St. Pk., 18–19.viii.2002, 21–22.viii.1999, E. Dotseth, yellow pan trap, 1♂, 4♀. **Virginia:** Clarke Co., Blandy

Exp. Farm, 2 mi S Boyce, 23–31.v.1991, D.R. Smith, malaise trap, 2♀ (OSUC 77467–77468).

Paleartic Region: CZECH REPUBLIC: Čelákovice, Lipovka res., 6.iv.1993, J. Macek, 3♀; 20.vii–3.viii.1993, J. Macek, 1♂ (OSUC 77479); 2–6.vi.1993, malaise trap, 1♀ (OSUC 77480); 2–19.vi.1994, malaise trap, 1♀; 8–16.vi.1993, pan trap, 1♀. Mer. Lanzhot Ranspurk, climax hardwood forest, 9–12.viii.1991, L. Masner, pan trap, 20♀, 14♂ (OSUC 77478). Lednice, 7–9.viii.1991, L. Masner, pan trap, riparian forest, 490♀, 83♂ (OSUC 77457, 77458). Orlické Hory, Dolní Černá, 28.viii–12.ix.1993, J. Jezek, 24♂ (OSUC 77488). Praha-Stromovka, 18–19.viii.1999, 12♀, 18♂ (OSUC 77459, 77460). Řevnice, env., 10–12.ix.1999, L. Masner, yellow pan trap, 2♀ 1♂ (OSUC 77486). Šarka, creek, 8.ix.1999, L. Masner, yellow pan trap, 6♂ (OSUC 77485). Slapy, env., 22.viii.1999, L. Masner, yellow pan trap, pond, 3♀, 9♂. **FRANCE:** Dordogne, Couze St. Front, 27.vi–11.vii.1993, H. Tussac, malaise trap, 1♀ (OSUC 77441). Hérault, Montferrier sur Lez, 3°51'E, 43°40'N, 6.vi.1994, P.G. Mason, malaise trap, 1♀ (OSUC 77481). Dép. Var, Tanneron, env., 27–29.viii.1999, L. Masner, yellow pan trap, creek, 50♀, 4♂ (OSUC 77455, 77456). **HUNGARY:** Kőzseg, 16–19.v.2001, L. Masner, yellow pan trap, sphagnum bog, 26♀ (OSUC 77461). **IRELAND:** Co. Dublin, Gollierstown, 25.vii.1945, A.W. Stelfox, 1♀, 1♂, A.W. Stelfox collection (OSUC 77443); 3.viii.1947, 1♂ (OSUC 77445); 11.ix.1946, 1♀ (OSUC 77444). **RUSSIA:** Khakassia Rep., 80 km N Shira, 460 m, 54°59'N, 89°32'E, 26.vii.2003, J. Peck, yellow pan traps near streamside, 03–112, 4♂ (OSUC 749465–79468). **SWEDEN:** Halland, Lunna, Bolg, 19.viii.1973, L. Huggert, 1♀, 1♂ (OSUC 77453, 77454). Västmanland, Kärbo s:n, Solbacken, shore of Lake Mälaren, 15.iii–1.v.1989, G.E. Nilsson, malaise trap, 7♀ (OSUC 43330, 43318, 43311, 43284, 43273, 43253, 43245). **TUNISIA:** 1 km S Toborka, 8.iv.1994, M. Soderlund, 1♂ (OSUC 77442). **UNITED KINGDOM:** Buckinghamshire, Burnham Beeches, 26.viii.1984, L. Masner, screen sweeping, vegetation on sphagnum bed creek, 2♀, 3♂ (OSUC 77448–77452). Oxford, 25.v.1953, J.R. Vockeroth, 1♀ (OSUC 77447). Oxon; Barrow Farm Fen, NCC, 18.viii–14.ix.1987, malaise trap, 2♂ (OSUC 77482). Oxon, Woodstock, 23.x.1952, 2♀ (OSUC 77484).

MATERIAL CITED IN LITERATURE (Kozlov and Kononova 1990; O'Connor et al., 2004; Walker, 1836): **IRELAND:** Down, Holywood, at the edges of ponds, among roots of aquatic plants, and on the water, A.H. Haliday. Dublin, Gollierstown, 6.x.1946, 3.xiii.1947, A.W. Stelfox; Royal Canal, Luttrellstown, 28.ix.1986, J.M. O'Connor, 1♀. Kildare, Landenstown, 25.ix.1949, A.W. Stelfox.

UNITED KINGDOM: near London, iii–x, at the roots of grass, moss, &c. Devonshire, by the edges of brooks and ponds. **UKRAINE:** Cherkasskaya obl., Kanyev, flood plain of Dnepr R., oak forest, 8.ii.1949, Kryshal', 1♀. Kievskaya obl., Fastov area, 11.vii.1972, S.V. Kononova, 1♂. **AZERBAIJAN,** Lenkoran', area of Shakhgach, 22.v.1975, S.V. Kononova, 1♀.

COMMENTS: The gena in the males are quite variable, even within the same population. Some specimens (fig. 4) have the gena subparallel or even slightly bulging so that the head is widest across the genae and not across the compound eyes. In contrast, other specimens, collected at the same time and place (e.g., in the Czech Republic), have the genae distinctly receding immediately behind the compound eyes (fig. 5). All specimens from Britain and from the Nearctic region have expanded temples. Extreme dimorphism in male morphology is known in the Scelionidae (e.g., Johnson, 1984), and this variation may be a more subtle expression of the same phenomenon.

We have not been able to locate specimens of *Thoron gibbus* described by Ruthe. He distinguished his species from *T. metallicus* based on differences in the antennal clava. In all respects, as far as we can tell from the published data, the description is consistent with *T. metallicus*. Ruthe's material was collected near Berlin, in moist habitats, and the species was not uncommon. Because the extensive material of *Thoron* from Europe consists of only a single species, we propose that *Thoron gibbus* is a junior synonym of *T. metallicus* (new synonymy).

Thoron rex, new species

Figure 18

DESCRIPTION: Length 2.0 mm. Female A4 subequal to or shorter than A3; clava robust, 2.9 times longer than wide; apex of A1 distinctly extending above top of head (lateral view with A1 in flexed position); female A2 brown, A3–A4 bright yellow, ocelli moderately large, lateral ocellus separated from inner orbit by approximately one diameter of posterior ocellus; contrasting with dark brown A5–A7; central portion of mesoscutum and scutellum at most with minute setigerous punctures (fig. 18); notaulus very short, not extending anteriorly to level of

posterior margin of tegula, simple, without crenulae; mesoscutum with only long semi-erect bristles and no micropilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein clearly developed, longer than stigmal vein; dorsellum unarmed medially; dorsal surface of propodeum excavate medially; all coxae yellow; hindfemur almost entirely honey-yellow to yellow, concolorous with apex of coxa; T1 without hump, longitudinally costate throughout; costae on T2 reaching at least to posterior third of tergite; T2 distinctly shorter than T3; T3 wider than long.

Male unknown.

ETYMOLOGY: From the Latin, *rex*, meaning king, emphasizing its similarity with *T. dux*.

MATERIAL EXAMINED: Holotype female: **BOLIVIA**: Santa Cruz, Andres Ibañez, Potrerillo, 17°40'S, 63°27'W, 438 m, 13–16.v.1997, L. Masner, yellow pan traps, OSUC 77432 (CNC type no. 22865). Paratypes: 1♀ with same data as holotype, OSUC 77433. Santa Cruz, Andres Ibañez, El Hondo, pools, 17°40'S, 63°27'W, 375 m, 13–16.v.1997, L. Masner, yellow pan traps, 1♀ (OSUC 77434); 1♂ with same locality data, collected 15.v.1997 (OSUC 146632). Santa Cruz, Ichilo, "El Chore" pools, 17°01'S, 64°11'W, 253 m, 9–11.v.1997, L. Masner, yellow pan traps, 1♀ (OSUC 77435).

Thoron rivalis, new species
Figures 6, 12

DESCRIPTION: Length 2.5 mm. Female A4 subequal to or shorter than A3; clava robust, 3.5 times longer than wide (fig. 6); apex of A1 at same level as top of head (lateral view with A1 in flexed position); female A2–A7 dark brown; male A11 2.0–2.3 times longer than wide; ocelli large, lateral ocellus separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus long, extending anteriorly beyond level of posterior margin of tegula; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein;

postmarginal vein clearly developed, longer than stigmal vein; dorsellum spinose medially, short, subtriangular; dorsal surface of propodeum not excavate; all coxae yellow; hindfemur partly to entirely dark brown; T1 without hump (fig. 12), longitudinally costate throughout; costae on T2 reaching at least to posterior third of tergite; T2 as long as or slightly longer than T3; T3 wider than long.

DIAGNOSIS: Most similar to *T. garciai*, distinguished from it by the darkened hindfemora in the male, T3 subequal to or longer than T2, and the more elongate female antennal clava.

ETYMOLOGY: From the Latin *rivalis*, meaning of a stream, referring to its association with a small permanent stream at the type locality.

MATERIAL EXAMINED: Holotype female: **BRAZIL**: Goiás, Niquelândia, Serra da Mesa Survey, 14°01.4'S, 48°18.5'W, 4.x.1995, N.F. Johnson, yellow pan trap along small stream, OSUC 10670 (MZSP). Paratypes. 3♂, 3♀ with same data as holotype (OSUC 10460, 10516, 10619, 10433, 10622, 10786). Specimens with same locality, method, and collector: 27.ix.1995, 1♂ (OSUC 12369); 28.ix.1995, 1♀ (OSUC 134089); 30.ix.1995, 2♂, 2♀ (OSUC 335, 336, 162, 197); 1.x.1995, 2♀ (OSUC 13731, 137980); 2.x.1995, 1♂, 3♀ (OSUC 134677, 134725, 134680, 134785); 3.x.1995, 1♂, 2♀ (OSUC 131708, 131732, 131765); 5.x.1995, 3♂, 2♀ (OSUC 110130, 110138, 110152, 110134, 110154). Goiás, Niquelândia, 14°01.3'S, 48°18.4'W, 4–5.x.1995, N.F. Johnson, malaise trap, 1♂ (OSUC 114). Goiás, Campinaçu, Serra da Mesa survey, 13°52.0'S, 48°23.2'W, 23–25.ii.1996, A. Sharkov, F. Ejchel, creek yellow pan traps, 1♂ (OSUC 131144). Goiás, Campinaçu, Serra da Mesa survey, 13°52.0'S, 48°23.2'W, 23–25.ii.1996, A. Sharkov, F. Ejchel, creek yellow pan traps, 2♀ (OSUC 131350, 131296). São Paulo: Salesópolis, Estação Biológica Boracéia, Trilha dos Pilões, 23°39'07"S, 45°53'48.5"W, 19–22.x.2002, bandejas amarelas, A.P. Aguiar, J.S. Freitas, 1♀ (OSUC 119925). **PANAMA**: Colón, Quebrada López, nr. Sabanita, 120 m, 9°19'19"N, 79°47'54"W, 16.i.2001, L. Masner, yellow pan trap, 1♂ (OSUC 77438). Veraguas, 1.3 km S Santa Fé, 300 m, creek bed, 8°30'00"N, 81°04'21"W, 31.xii.2000–3.i.2001, L. Masner, yellow pan trap, 1♂ (OSUC 77439). Río Sajalices, 8°41'20"N, 79°51'17"W, 22.i.2001, L. Masner, yellow pan trap, 1♂ (OSUC 77440).

COMMENTS: The only species of *Curicta* recorded from central Brazil by Keffer

(1996) is *C. granulosa* De Carlo; this must be a prime suspect to be a host of *Thoron rivalis*.

Thoron spinifer, new species

Figures 13, 14

DESCRIPTION: Length 2.1 mm. Apex of A1 well below top of vertex; male A11 2.4–2.6 times as long as wide; ocelli large, lateral ocellus separated from inner orbit by one-half diameter of posterior ocellus; central portion of mesoscutum and scutellum at most with minute setigerous punctures; notaulus moderately long, but only reaching anterior margin of tegula, simple, without crenulae; mesoscutum with both long bristles and shorter underlying pilosity; metapleuron sparsely setose anteriorly, posterior portion of metapleuron and lateral face of propodeum nearly glabrous; marginalis not thickened, as wide as submarginal or basal portion of stigmal vein; postmarginal vein clearly developed, longer than stigmal vein; dorsellum with long, slender, spinelike needle medially (fig. 13); dorsal surface of propodeum not excavate; all coxae yellow; hindfemur partly to entirely dark brown; costae on T2 short, reaching only to middle of tergite (fig. 14); T2 as long as T3; T3 wider than long.

Female unknown.

DIAGNOSIS: Distinguished from other species of *Thoron* by the long and acute dorsellar spine and the short costae on T2.

ETYMOLOGY: From the Latin, *spinifer*, bearing a spine, referring to the elongate metanotal armature.

MATERIAL EXAMINED: Holotype male: **ECUADOR:** Napo, Puerto Misahuallí, 250 m, 18–22.ii.1983, M. Sharkey, OSUC 77477 (CNC type no. 22866).

COMMENTS: The presence of the elongate metanotal spine in the male leads us to predict that female, when discovered, is unlikely to have T1 expanded into a basal horn or hump.

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